Technik für Umweltschutz

Messen. Regeln. Überwachen.

Operating instructions

Liquid detector

AFA 11

AFRISO
Leak detection system
Z-65.40-214

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1 About these operating instructions

These operating instructions describe the liquid detector AFA 11 (also referred to as "product" in these operating instructions). These operating instructions are part of the product.

- You may only use the product if you have fully read and understood these operating instructions.
- Verify that these operating instructions are always accessible for any type of work performed on or with the product.
- Pass these operating instructions as well as all other product-related documents on to all owners of the product.
- If you feel that these operating instructions contain errors, inconsistencies, ambiguities or other issues, contact the manufacturer prior to using the product.

The manufacturer shall not be liable in any form whatsoever for direct or consequential damage resulting from failure to observe these operating instructions or from failure to comply with directives, regulations and standards and any other statutory requirements applicable at the installation site of the product.

A translation of the operating manual into the languages Spanish and Italian can be found at www.afriso.com.

2 Information on safety

2.1 Safety messages and hazard categories

These operating instructions contain safety messages to alert you to potential hazards and risks. In addition to the instructions provided in these operating instructions, you must comply with all directives, standards and safety regulations applicable at the installation site of the product. Verify that you are familiar with all directives, standards and safety regulations and ensure compliance with them prior to using the product.

Safety messages in these operating instructions are highlighted with warning symbols and warning words. Depending on the severity of a hazard, the safety messages are classified according to different hazard categories.

DANGER

DANGER indicates a hazardous situation, which, if not avoided, will result in death or serious injury.

NOTICE

NOTICE indicates a hazardous situation, which, if not avoided, can result in equipment damage.

In addition, the following symbols are used in these operating instructions:

This is the general safety alert symbol. It alerts to injury hazards or equipment damage. Comply with all safety instructions in conjunction with this symbol to help avoid possible death, injury or equipment damage.

This symbol alerts to hazardous electrical voltage. If this symbol is used in a safety message, there is a hazard of electric shock.

2.2 Intended use

This product may only be used to signal accumulations of liquids during monitoring of:

- Collection facilities under storage tanks, burners or motors
- Containers (tanks) with collection facilities which are not visible
- Collection facilities below devices consuming oil
- Manholes, pipe and cable ducts
- Pump and control stations where oil can accumulate due to leaks or backflow

The product is suitable for liquids to which the material of the photoelectric probe is resistant:

- Diesel fuel (DIN EN 590) and low-viscosity oils with flash points of > 55 °C at atmospheric pressure and at temperatures of -10 °C to 60 °C in dry rooms
- Fuel oil EL as per DIN 51603-1 and as per DIN SPEC 51603-6
- Paraffinic fuels (HVO/GTL as per DIN/TS 51603-8)
- Unused and used motor oils (for example, SAE 15W-40), gearbox oils and hydraulic oils, transformer oils and vegetable oils
- AdBlue® (urea solution 32.5 %) as per DIN 70070/ISO 22241
- Water, grey water

The owner or operator must ensure that the components and the overall system meet all directives and regulations applicable at the installation site, for example, the directives pertaining to water and waterways.

Leak detection system class III as per DIN EN 13160-1 and DIN EN 13160-4 as liquid sensor system in leak or interstitial spaces, as safety device as per worksheet DWA-A 791 or leak detection system as per worksheet DWA-A 779.

Any use other than the application explicitly permitted in these operating instructions is not permitted and causes hazards.

Verify that the product is suitable for the application planned by you prior to using the product. In doing so, take into account at least the following:

- All directives, standards and safety regulations applicable at the installation site of the product
- All conditions and data specified for the product
- The conditions of the planned application

In addition, perform a risk assessment in view of the planned application, according to an approved risk assessment method, and implement the appropriate safety measures, based on the results of the risk assessment. Take into account the consequences of installing or integrating the product into a system or a plant.

When using the product, perform all work and all other activities in conjunction with the product in compliance with the conditions specified in the operating instructions and on the nameplate, as well as with all directives, standards and safety regulations applicable at the installation site of the product.

2.3 Predictable incorrect application

The product must never be used in the following cases and for the following purposes:

- Hazardous area (EX)
  - If the product is operated in hazardous areas, sparks may cause deflagrations, fires or explosions.
- Corrosive liquids which attack the probe material used
- As overfill prevention system as per Technical Approval of the German Institute for Civil Engineering (DIBt)

2.4 Qualification of personnel

Only appropriately trained persons who are familiar with and understand the contents of these operating instructions and all other pertinent product documentation are authorized to work on and with this product.

These persons must have sufficient technical training, knowledge and experience and be able to foresee and detect potential hazards that may be caused by using the product.

All persons working on and with the product must be fully familiar with all directives, standards and safety regulations that must be observed for performing such work.

In the case of water-polluting substances:

This product may only be mounted, commissioned, maintained and decommissioned by a qualified, specialised company which has all required certifications and which meets the following requirements:

- Compliance with all directives, standards and safety regulations concerning handling of water-polluting substances as applicable at the installation site of the product
- In Germany: Certification as per § 62 "Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen" (AwSV) (Ordinance on Installations for Handling Water-Polluting Substances)

2.5 Personal protective equipment

Always wear the required personal protective equipment. When performing work on and with the product, take into account that hazards may be present at the installation site which do not directly result from the product itself.

2.6 Modifications to the product

Only perform work on and with the product which is explicitly described in these operating instructions. Do not make any modifications to the product which are not described in these operating instructions.

3 Transport and storage

The product may be damaged as a result of improper transport or storage.

NOTICE

INCORRECT HANDLING

- Verify compliance with the specified ambient conditions during transport or storage of the product.
- Use the original packaging when transporting the product.
- Store the product in a clean and dry environment.
- Verify that the product is protected against shocks and impact during transport and storage.

Failure to follow these instructions can result in equipment damage.

4 Product description

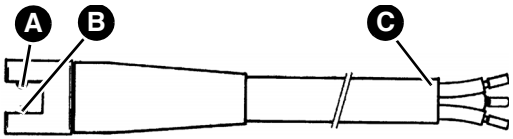
The product consists of a control unit and a photoelectric probe.

The probe consists of an infrared transmitter and an infrared receiver located at a specific distance from each other. These two parts form a light barrier.

Depending on the order, the control unit is equipped with an EnOcean® wireless module. Products without an EnOcean® wireless module can be retrofitted.

4.1 Overview

4.1.1 Photoelectric probe



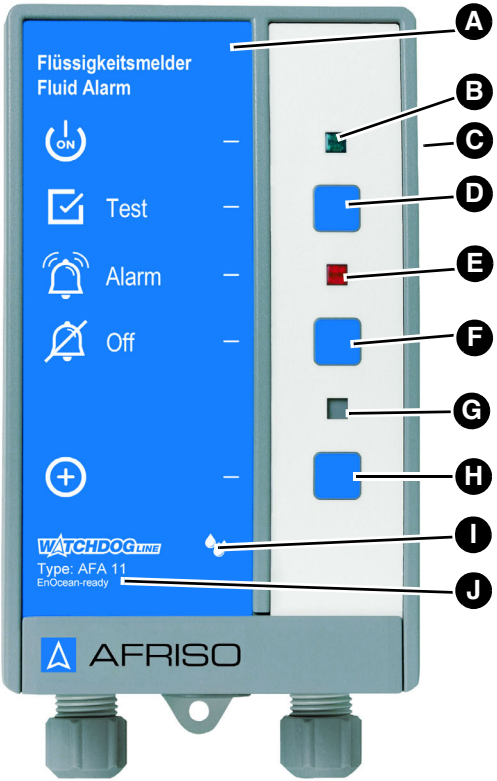
A. Transmitter
B. Receiver
C. Three-wire probe cable

Fig. 1: Photoelectric probe

4.1.2 Control unit

The control unit contains the following elements in an impact-resistant plastic housing: display elements and controls as well as all electronic components for signal processing and conversion of the probe signal into a digital output signal.

The product can be retrofitted with an EnOcean® wireless module.



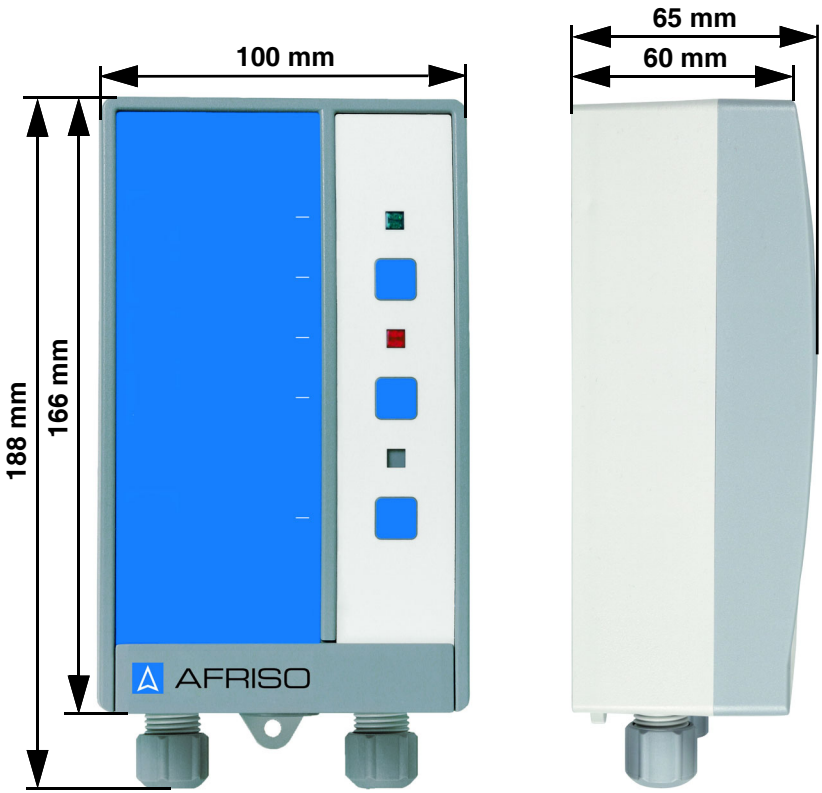
A. Designation of product
B. Green LED
C. Battery compartment (9 V) for optional battery
D. Test key
E. Red LED
F. Acknowledge key
G. without function
H. LRN key (for EnOcean® wireless module)
I. Icon from AFRISOhome app
J. Type designation of the product

Fig. 2: Control unit

4.1.3 Pictograms

Symbol	Meaning/function
	**Indication** When power is supplied to the product, the green LED next to the symbol indicates that the product is ready for operation.
	**Key** The Test key allows you to perform the function test of the product and verify correct operation.
	**Indication** The red LED to the right of the symbol indicates an alarm or an error.
	**Key** This key allows you to acknowledge and mute the audible alarm.
	**Key** If the LRN key is pressed, the product sends a LRN telegram (LRNTEL) to connect to the AFRISOhome gateway (only for control unit with EnOcean® wireless module).

4.2 Dimensions



4.3 Function

The product can detect accumulations of liquids.

The photoelectric probe detects the different optical and conductive characteristics of air and liquids. If there is air between the transmitter and the receiver, most of the infrared light transmitted by the transmitter is received by the receiver. If there is liquid between the transmitter and the receiver, only a small portion of the infrared light reaches the receiver and the product triggers an alarm.

The product triggers visual and audible alarms. The alarm can be transmitted to additional equipment (for example, horn or warning light with rotating reflector) via the changeover contact.

Products with EnOcean® wireless module

The AFRISOhome gateway allows for automatic transmission of messages in the case of an alarm.

4.4 Relay output

The product features a voltage-free changeover contact for transmission of the alarm condition to additional equipment.

The product can be operated with or without additional equipment, for example:

- Visual and audible alarm units
- Remote alarm equipment
- Building control systems
- Other

Operating mode Eco

The product is factory-set to the operating mode "Eco". If no alarm is present, the relay is de-energised. In case of an alarm, the relay is energised and switches the changeover contact.

Operating mode Failsafe

You can also operate the product in the operating mode "FailSafe" (see chapter "Setting the operating mode"). If no alarm is present, the relay is energised. In case of an alarm, the relay is de-energised.

The operating mode "FailSafe" is recommended if additional alarm units are connected to the product.

4.4.1 Scope of delivery

The scope of delivery includes:

A. Control unit
B. Probe holder
C. Photoelectric probe with 10 m signal cable

Fig. 3: Scope of delivery

4.5 Approvals, conformities, certifications

The product complies with:

- EMC Directive (2014/30/EU)
- Low Voltage Directive (2014/35/EU)
- RoHS Directive (2011/65/EU)

The product with EnOcean® wireless module also complies with:

- Radio Equipment Directive, RED (2014/53/EU)

Approvals:

- Technical Approval of the German Institute for Civil Engineering (DIBt) Z-65.40-214

4.6 Technical specifications

Control unit

Parameter	Value
General specifications	
Dimensions housing (W x H x D)	100 x 188 x 65 mm
Weight	0.5 kg
Housing strength	IK06 impact test 1J impact energy Test with steel ball 500 g
Response delay	< 2 seconds
Emissions alarm sound	Min. 70 dB(A) A-weighted sound level of the audible alarm at a distance of one metre
Ambient conditions	
Ambient temperature operation	-10 ... 60 °C
Ambient temperature storage (without battery)	-10 ... 60 °C
Relative humidity	< 80 % (non-condensing)
Atmospheric pressure	0.08 MPa (0.8 bar) ... 0.11 MPa (1.1 bar)
Electrical data	
Supply voltage part number 40890	AC 100 ... 240 V, 50 ... 60 Hz
Supply voltage part number 40894	AC 15 ... 24 V, 50 ... 60 Hz or DC 15 ... 24 V
Battery (optional)	ZnC (zinc carbon), 9V monobloc battery
Nominal power 230 V version	Eco: 1.5 VA FailSafe: 2.5 VA
Nominal power 24 V version	Eco 1 VA FailSafe 1.5 VA
Relay output: breaking capacity	2 A, AC 250 V, DC 30 V
Relay fuse	2 A

Parameter	Value
Protection class (EN 60730) 230 V part number 40890	II
Protection class (EN 60730) 24 V part number 40894	III
Degree of protection (EN 60529)	IP 30
Overvoltage category (EN 60664-1)	II
Pollution degree	II
EnOcean® wireless	
Frequency	868.3 MHz
Transmission power	Max. 10 mW
Range	See chapter "Information on EnOcean® wireless"
EnOcean® Equipment Profile (EEP)	A5-30-04

Photoelectric probe

Parameter	Value
General specifications	
Dimensions (Ø x L)	10 x 33 mm
Space requirements (L x H)	50 x 10 mm
Weight	0.3 kg
Material probe body	Plastic PE-HD
Probe element	Infrared transmitter/receiver
Connection cable: Standard length Maximum length	LiYY 3 x 0.25 mm² 10 m 50 m (shielded)
Response level (EN 13160-4)	≥ 4 mm
Recovery time *	≤ 1 s
Response time *	Max. 5 min

Product description

Parameter	Value
Ambient conditions	
Ambient temperature operation	-10 ... 60 °C
Ambient temperature storage	-10 ... 60 °C

*** Explanation of term**

- **Response time**: Time between introduction of test liquid and triggering of the alarm by the product.
  (test setup as per DIN EN 13160-1:2003 and DIN EN 13160-4:2003).
- **Recovery time**: Time between removal of the sensor from the test liquid and disabling of the alarm by the product.
  (test setup as per DIN EN 13160-1:2003 and DIN EN 13160-4:2003).

5 Mounting

- ⇨ Verify that the control unit can only be accessed by authorised qualified persons accessible and that it is protected against unauthorised contact.
- ⇨ Verify that the audible alarm signal of the control unit can always be heard, even in the case of ambient noise.

If audibility cannot be ensured, you must install an additional alarm unit at a suitable location in the building (for example, additional alarm unit ZAG 01, horn KH 1 or combined alarm light and horn from AFRISO). In this case, it is recommended to use the operating mode "FailSafe" (see "Setting the operating mode").

5.1 Preparing mounting

Note the information on the requirements concerning the interstitial space and the leakage containment.

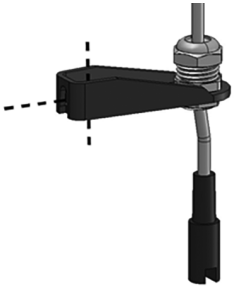
This information can be found at the end of these operating instructions in the chapters "Additional requirements and information".

5.2 Mounting the photoelectric probe

- ⇨ Verify that the probe is submerged even in the case of small amounts of liquid.
- ⇨ Verify that the tip of the probe is not subjected to mechanical load.

1. Mount the probe at the lowest point of the area to be monitored (lying or suspended).
   - Do not suspend the probe directly from the control unit.
2. Use the holder supplied with the product to provide strain relief for fastening.
3. Place the probe at a position where there is little or no influencing light.

5.3 Mounting the bracket

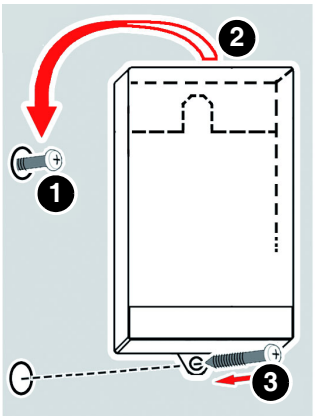


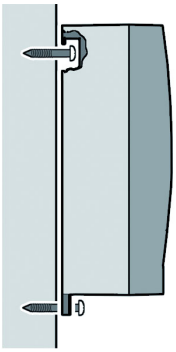
1. Mount the bracket to a wall or a container (vertical or horizontal) using a screw.

5.4 Mounting the control unit

⇨ Verify that the control unit is mounted to an even, rigid and dry indoor wall at eye level.

⇨ Verify that the control unit is protected against water and splash water.





Mount the housing to the wall.

1. Mount the screw to the wall.
2. Fit the control unit.
3. Fasten the control unit by screwing the bottom lug to the wall.

5.5 Electrical connection

DANGER

ELECTRIC SHOCK

- Verify that the degree of protection against electric shock (protection class, double insulation) is not reduced by the type of electrical installation.
- Verify that the product is connected by means of a permanently installed cable connection.

Failure to follow these instructions will result in death or serious injury.

DANGER

ELECTRIC SHOCK CAUSED BY LIVE PARTS

- Disconnect the mains voltage supply before performing the work and ensure that it cannot be switched on.
- Verify that no hazards can be caused by electrically conductive objects or media.

Failure to follow these instructions will result in death or serious injury.

NOTICE

UNAVAILABLE MONITORING FUNCTION

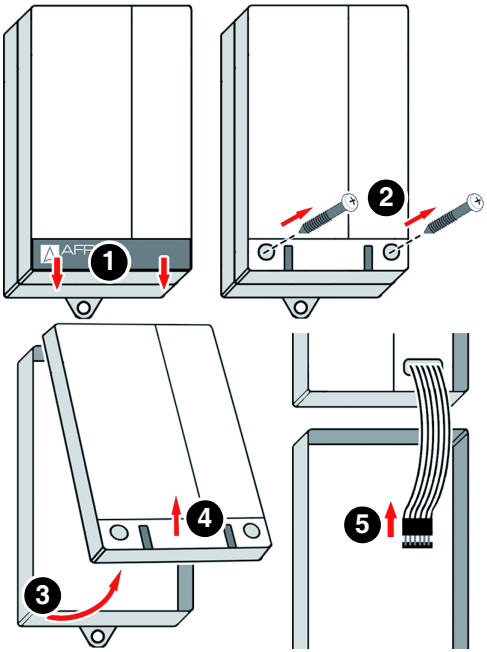
- Do not install mains plugs or switches in the supply line to the product.
- Only power on/power off the product via the on-site mains fuse.

Failure to follow these instructions can result in equipment damage.

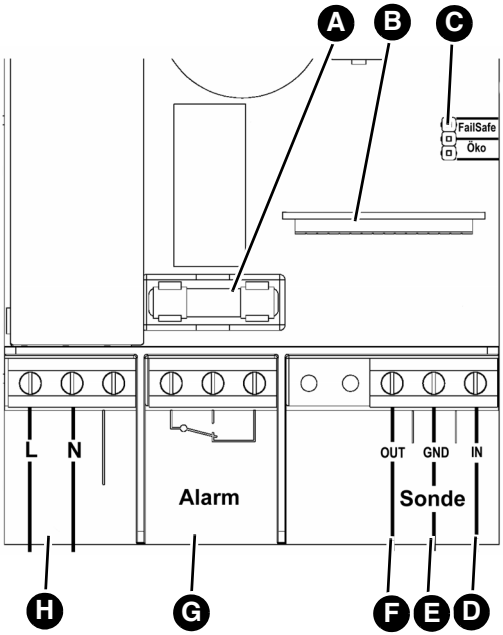
5.5.1 Power supply control unit 230 V

⇨Verify that the product is connected to mains by means of a suitable, permanently installed cable (for example, NYM-J 3 x 1.5 mm²).

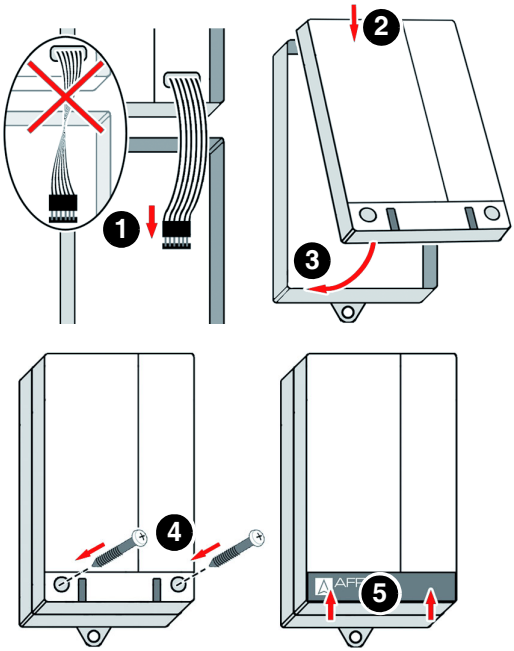
⇨Verify that the power supply to the control unit is separately fused (16 A maximum).



1. Open the control unit.
2. Route the mains cable through the left cable gland into the control unit.
3. Connect the phase to terminal L and the neutral conductor to terminal N.
   - The protective ground conductor (PE) does not have to be connected.



A. Relay fuse (F2)
B. Slot for EnOcean® wireless module
C. Jumper for operating mode
D. White
E. Brown
F. Green
G. Relay output
H. Connection terminal for power supply



2. Close the control unit.

5.5.2 Power supply control unit 24 V

The product can be directly connected to the DC supply (for example, of a control cabinet or a PLC).

1. Open the control unit.
2. Route the mains cable through the left cable gland into the control unit.
3. Connect the wires to the terminals L and N. Any polarity is permissible.
   - The power supply unit features protection against reverse polarity.

5.5.3 Connecting the photoelectric probes

Use a cable with 3 x 1 mm² to extend the probe cable. Use shielded cables for lengths of more than 15 m. The maximum length of the probe cables is 50 m. Use underground cables such as NYY 3 x 1.5 mm² for underground cable installation.

⇨Verify that the probe cable is sufficiently protected from damage (for example, by installing it in a metal pipe).

⇨Verify that the probe cable is not routed immediately next to or together with cables carrying mains voltage.

1. Route the probe cable through the cable gland at the right.
2. Connect the wires of the probe cable as follows:
   - Green to terminal OUT
   - Brown to terminal GND
   - White to terminal IN

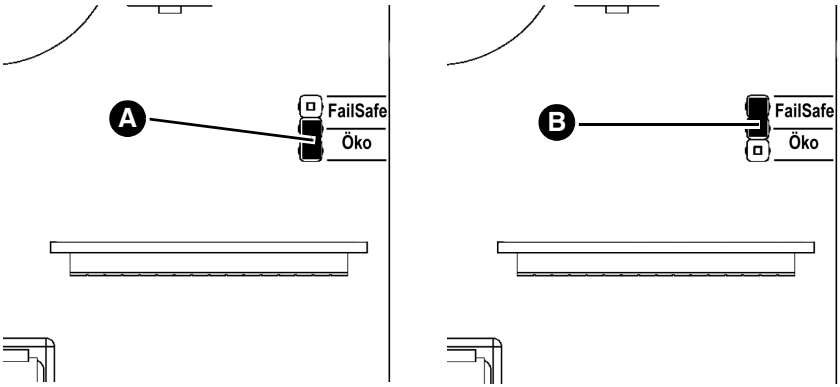
5.5.4 Setting the operating mode

The product is factory-set to the operating mode "Eco" (see Page 12).

If you operate the product in the operating mode "FailSafe", you must change the position of the jumper on the PCB.

⇨Verify that the mains voltage is interrupted and cannot be switched on.

1. Open the control unit.
2. Plug the jumper onto the contacts for the operating mode to be set.



A. Operating mode "Eco"

B. Operating mode "Failsafe"

3. Close the control unit.

5.5.5 Relay output

NOTICE

VOLTAGE PEAKS WHEN INDUCTIVE CONSUMERS ARE SWITCHED OFF

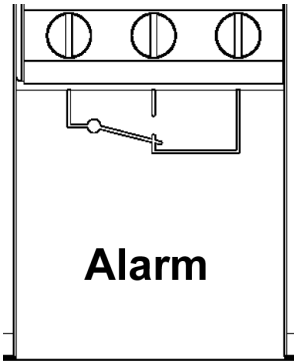
When inductive consumers are switched off, this can cause voltage peaks and can lead to adverse effects on electrical systems and may destroy the switching contact.

- Use commercially available standard RC combinations such as 0.1 µF/100 Ohm for inductive consumers.

Failure to follow these instructions can result in equipment damage.

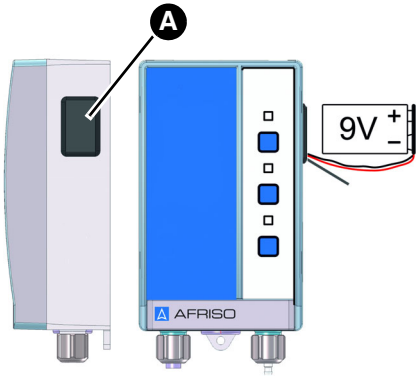
The operating state is available via the relay output (voltage-free change-over contact). The alarm can be transmitted to an additional alarm unit (for example, ZAG 01).

1. Connect the additional equipment to the terminals "Alarm".



5.5.6 9 V monobloc battery (optional for signal in the case of power outage)

If a battery is connected, a signal sound is activated in the case of a power outage. The signal sound cannot be acknowledged; it remains on until mains supply voltage is available again. When mains supply voltage is restored, the product immediately resumes operation. If an alarm has occurred in the meantime, this is indicated.



1. Open the cover of the battery compartment using a slotted screwdriver (A).
2. Connect a 9V monobloc battery (optional).
3. Push the 9 V monobloc battery into the battery compartment (verify correct mounting position).
4. Close the cover of the battery compartment.

5.5.7 Retrofitting an EnOcean® wireless module (optional)

DANGER

ELECTRIC SHOCK CAUSED BY LIVE PARTS

- Disconnect the mains voltage supply before performing the work and ensure that it cannot be switched on.

Failure to follow these instructions will result in death or serious injury.

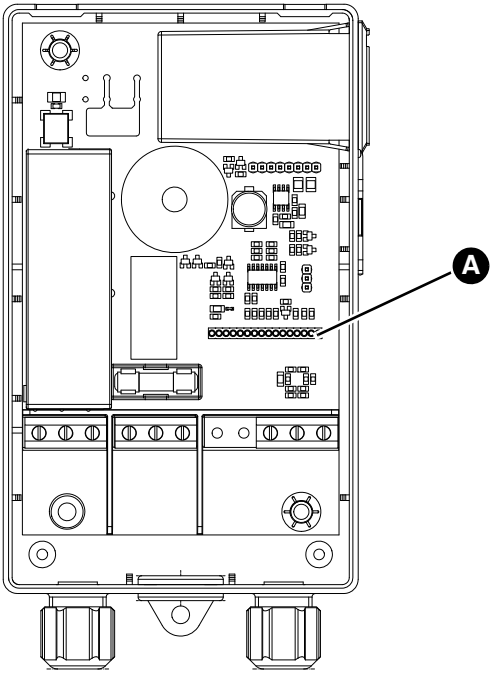
NOTICE

ELECTROSTATIC DISCHARGE

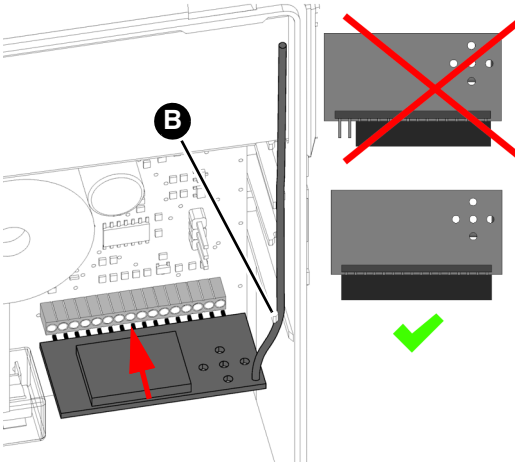
- Always earth yourself before touching electronic components.
- Do not touch the EnOcean® wireless module to plug it in; use the anti-electrostatic film to plug it into the slot.

Failure to follow these instructions can result in equipment damage.

1. Open the control unit.



A. Slot for EnOcean® wireless module



2. Plug the EnOcean® wireless module into the slot.

   When plugging in the wireless module, ensure the following:
   - All pins must be inserted into the female connector.
   - The antenna must be located in the guide (B) along the housing wall.

3. Close the cover of the control unit.

6 Commissioning

6.1 Connecting the product to an AFRISOhome gateway (optional)

See the operating instructions of the AFRISOhome gateway or the app for detailed information on establishing a wireless connection.

⇨ Verify correct electrical connection of the control unit (see chapter "Electrical connection").

⇨ Verify that the EnOcean wireless signal of the control unit reaches the AFRISOhome gateway or that the AFRISOhome gateway is in the vicinity of the control unit.

⇨ Verify that the AFRISOhome gateway is in "Learn" mode.

1. Switch on the mains voltage via the on-site mains fuse.
   - The green LED is on.
2. Briefly press the lower key at the control unit once.
   - The control unit sends a Learn telegram (LRNTEL).
   - The control unit is connected to the AFRISOhome gateway.
3. Note the instructions/information in the app.

6.2 Commissioning the product

⇨ Verify that the probe is dry.

⇨ Verify that the product has been properly mounted and electrically connected.

1. Apply voltage via the on-site mains fuse.
   - The green LED is on.
2. Perform the function test.

6.3 Performing the function test

At the photoelectric probe

At low temperatures and in the case of liquids with a high viscosity, the liquid may not be able to drip off completely. This may cause continuous alarm.

⇨ Verify that the liquid to be detected is detected at all temperatures that may be present at the installation site.

1. Submerge the probe into the liquid to be detected.
   - The red LED lights up and the audible alarm sounds.
2. Press the acknowledge key at the control unit.
   - The audible alarm is switched off.
   - The red LED lights.
3. Remove the probe from the liquid.
   - The red LED goes off.

If a continuous alarm is triggered, clean the probe (see chapter "After an alarm condition").

At the control unit

1. Press the Test key
   - The red LED lights up and the audible alarm sounds.
2. Release the Test key to terminate the function test at the control unit.

Function test power outage

1. Disconnect the mains voltage.
   - The red LED goes off.
   - The green LED goes off.
   - The audible alarm sounds (only if a 9 Volt monobloc battery is inserted).
2. Apply mains voltage.
   - The green LED is on.

7 Operation

Operating the product is limited to its regular monitoring:

- The green LED is on (ready for operation)
- The red LED is off
- The audible alarm is off

Also note the information provided in chapter 8 "Maintenance".

7.1 Alarm

If the photoelectric probe detects liquid, the electrical output signal of the probe changes and the control unit triggers an alarm.

- The red LED lights
- The audible alarm sounds

The alarm can be transmitted to additional equipment via the relay output.

In the case of products with an EnOcean® wireless module, the control unit sends a message to the AFRISOhome gateway. The user receives a message from the AFRISO app that liquid has been detected.

7.1.1 Acknowledging an alarm

1. Press the Acknowledge key to mute the audible alarm.
   - The red LED remains lit.

Power outage

In the case of a voltage drop (and if the battery is inserted) the alarm sounds. The alarm cannot be acknowledged.

To disable the audible alarm, restore the mains voltage or remove the battery.

7.1.2 After an alarm condition

After an alarm, the photoelectric probe must be checked for pollution.

⇨Verify that there are no remainders of the liquid or deposits between the transmitter and the receiver of the light barrier.

1. Remove remainders of liquid between the transmitter and the receiver.
2. Carefully clean the probe with a dry, lint-free cloth (see "Maintenance").
3. Replace the probe if deposits or encrustation have formed between the transmitter and the receiver of the light barrier.
4. Perform a function test (see "Performing the function test").

7.2 Use in flood hazard areas

NOTICE

INOPERABLE PRODUCT

- Verify that the product is replaced after a flood event.

Failure to follow these instructions can result in equipment damage.

8 Maintenance

8.1 Maintenance intervals

NOTICE

UNSUITABLE CLEANING AGENTS

- Verify that you use only cleaning agents which do not contain solvents for cleaning the plastic parts/the product.

Failure to follow these instructions can result in equipment damage.

When	Activity
Monthly, weekly, if necessary Depends on the resistance of the retention unit to the medium	Verify operational readiness, actuate the Test key (D). Also inspect the state of the system.
Annually	Test the function (see "Performing the function test")
After an alarm condition	Test the operational readiness of the probes. See "After an alarm condition". Clean slightly polluted parts. Replace damaged parts. Test the function (see "Performing the function test")
Change of the liquid to be monitored or recommissioning of the storage system	Test the function (see "Performing the function test").
Annually or after power outage	Check the charging state of the battery (only with inserted battery).
If required	Replace the battery

8.2 Maintenance activities

8.2.1 Cleaning the probes

1. Remove slightly adhesive liquids from the probe with a dry, lint-free cloth.

The probe must be replaced in the case of strongly adhering pollution (for example, crystal salts or adhering oil).

8.2.2 Replacing the relay fuse F2

DANGER

ELECTRIC SHOCK CAUSED BY LIVE PARTS

- Disconnect the mains voltage supply before performing the work and ensure that it cannot be switched on.

Failure to follow these instructions will result in death or serious injury.

⇨Verify that the mains voltage of the device and the relay contact is interrupted and cannot be switched on.

1. Open the control unit, see Page 18.
2. Remove the transparent cover from the relay fuse F2 (see chapter Electrical connection).
3. Fit a new relay fuse F2.
4. Refit the transparent cover.
5. Connect the flat cable to the connector.
6. Close the control unit.
7. Apply mains voltage.

9 Troubleshooting

Any malfunctions that cannot be removed by means of the measures described in this chapter may only be repaired by the manufacturer.

Problem	Possible reason	Repair
Green LED is not on	No supply voltage	Apply supply voltage
	Flat cable not connected to printed circuit board	Connect the flat cable to the printed circuit board
Red LED flashes and the audible alarm sounds even though the probe is not in liquid	Short circuit in the probe	Check the probe or replace it
	Line interruption to the probe	Check the probe cable
Red LED is off and the audible alarm does not sound, even though the probe is in liquid	Light reaches the photoelectric probe	Mount the probe at a different position or protect the probe against light
	Probe defective	Replace the probe
Other malfunctions	-	Contact the AFRISO service hotline

10 Decommissioning, disposal

Dispose of the product in compliance with all applicable directives, standards and safety regulations.

Electronic components and batteries must not be disposed of together with the normal household waste.

1. Disconnect the product from mains.
2. Dismount the product (see chapter "Mounting", reverse sequence of steps).
3. Remove the optional battery from the product
4. Dispose of the product and of the battery separately.

11 Returning the device

Get in touch with us before returning your product (service@afriso.de).

12 Warranty

See our terms and conditions at www.afriso.com or your purchase contract for information on warranty.

13 Spare parts and accessories

NOTICE

UNSUITABLE PARTS

- Only use genuine spare parts and accessories provided by the manufacturer.

Failure to follow these instructions can result in equipment damage.

Product

Product designation	Part no.	Figure
Liquid detector AFA 11 AC 230 V	40890	
Liquid detector AFA 11 DC 24 V	40894	

Spare parts and accessories

Product designation	Part no.	Figure
Photoelectric probe	44503	
Foil keypad	43727	

14 Information on EnOcean® wireless

14.1 Range of EnOcean® wireless

Visit www.enocean.com for further information on range planning with EnOcean®.

14.2 Additional information on EnOcean® wireless systems

Additional information on planning, installation and operation of EnOcean® wireless systems can be found at www.enocean.com.

- Wireless standard
- Wireless technology
- AN001
- AN102
- AN103
- AN201

14.3 Features of the EnOcean® technology

Visit www.afrisohome.de for documents on EnOcean® technologies.

A variety of videos on AFRISO products can also be found on the AFRISO YouTube channel.

15 Appendix

15.1 Additional requirements and information

This chapter contains further requirements and information from the 13160:2003 series of standard which must be fulfilled for a standards-compliant installation of the product.

15.1.1 Interstitial space

The standards EN 13160-4:2003 and EN 13160-7:2003 define the following requirements concerning the interstitial space:

- The interstitial space must be designed in such a way that it allows for the indication of at least 10 l of a specific liquid that is present in the interstitial space or that penetrates into it.
- The interstitial space must be resistant to the expected thermal, chemical and mechanical loads.
- The interstitial space must be resistant to the stored liquid.
- The liquid in the interstitial space must not be harmful to the stored liquid.
- The interstitial space must be designed in such a way that a monitoring probe can be installed at the lowest point of the interstitial space.
- The interstitial space must be designed in such a way that the leakage liquid reaches the lowest point of the interstitial space.
- The tank system must be designed in such a way that there are no connections through the interstitial space to the inner tank below the maximum filling level.
- The pipe system must be designed in such a way that there are no connections through the interstitial space to the inner pipe.
- It must be possible to inspect the interstitial space for possible damage.

15.1.2 Leakage containment

The standard EN 13160-7:2003 defines the following requirements for the leakage containment:

- The design of the leakage containment (with liquid) must allow for the indication of a minimum amount of 10 l of the leak detection fluid.
- The number of sensors in the system must correspond to the number of recesses in the leakage containment.
- The leakage containment must be liquid-tight and impermeable to the stored liquid. The leakage containment must not have an outlet below the liquid level.
- No water may be able to enter the leakage containment (for example, through rain).
  - If necessary, take appropriate measures so that the function of the product is not impaired.
- There must be no openings through the walls of the leakage space that could impair the function of the leakage space.
- It must be possible to inspect the leakage containment for leaks.
- The primary barrier is constituted by the inner jacket or the inner tank wall. If the leakage containment is used as a retention unit for a primary system containing liquid, then the retention unit must be able to contain the entire contents of the primary system.